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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/317,986 | 05/25/1999 | HIDENORI YAMANAKA | Q54509 | 9754 |

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EXAMINER

BOYD, JENNIFER A

ART UNIT PAPER NUMBER

1771

DATE MAILED: 03/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/317,986

Applicant(s)

YAMANAKA ET AL.

Examiner

Jennifer A. Boyd

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6,8,10-18 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) 11-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6,8,10,18,21-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The Applicant's Remarks and 1.132 Declaration, filed November 20, 2005, have been entered and have been carefully considered. Claims 11 – 17 are withdrawn and claims 1, 6, 8, 10 – 18 and 21 – 24 are pending. The invention as currently claimed is unpatentable for reasons herein below.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1, 8, 10, 18 and 21 – 24 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Auerbach (EP 709499) in view of Fukata (US 4,454,189). The rejection has been revised below for a typographical error. The rejection is maintained.

As to claims 1, 18 and 21 – 22, Auerbach teaches a meltblown microfiber web prepared from polyarylene sulfide polymers, particularly polyphenylene sulfide (Abstract). The fibers typically have a diameter between 0.1 and 20 microns (page 1, lines 1 – 15). Auerbach notes that lower viscosity material such as 300 poise polyarylene sulfide can be used (page 6, lines 20 – 35).

As to claims 8 and 10, Auerbach teaches that the polyarylene sulfide may be cross-linked (page 3, lines 40 – 45). The limitation of “thermal oxidation cross-linking treatment” at “160 – 260 degrees Celsius for 1 – 120 hours” is not given any patentable weight. The method of

Art Unit: 1771

performing the cross-linking is not germane to the issue of patentability of the article itself. The burden is placed upon the Applicant to demonstrate unobvious differences in the final products.

As to claims 23 and 24, Auerbach teaches that the polyarylene sulfide comprises a homopolymer or a copolymer. The copolymer comprises at least 50 mol % or more preferably about 70 mol % of p-phenylene sulfide units (page 3, lines 40 – 55).

Auerbach fails to specifically teach that the polyarylene sulfide has a non-Newtonian coefficient of 1.05 – 1.20 as required by claims 1 and 18, and specifically a coefficient between 1.06 and 1.19 as required by claims 21 and 22.

Although *Auerbach* does not explicitly teach that the non-Newtonian coefficient is between 1.05-1.20 as required by claims 1 and 18 or between 1.06 – 1.19 as required by claims 21 – 22, it is reasonable to presume that the property is inherently between 1.05 – 1.20. Support for said presumption is found in the use of like materials (i.e. a meltblown microfiber web prepared from polyarylene sulfide polymers, particularly polyphenylene sulfide where the fibers have a diameter between 0.1 and 20 microns) which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed property of a non-Newtonian coefficient between 1.05 – 1.20 would obviously have been present once the Auerbach product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

Alternatively, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a non-Newtonian coefficient of 1.05 – 1.20 or between 1.06 – 1.19, since it has been held that where general conditions of a claim are disclosed in the

Art Unit: 1771

prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454 USPQ 233 (CCPA 1955). The non-Newtonian coefficient is related to the shear stress and rate of shear and the level of cross-linking present in the polymer. In the present invention, one would have been motivated to select such a value by the reasoned expectation of varying the shear stress and rate of shear in order to achieve the desired level of cross-linking of the polymer.

Alternatively, Fukata teaches a sheet comprising randomly dispersed polyphenylene sulfide (PPS) filaments which has outstanding chemical resistance, heat resistance, electrical insulating properties (Abstract). Fukata teaches that the PPS polymer has a non-Newtonian coefficient between 0.9 and 3.0, preferably between 0.9 and 2.0 (column 4, lines 5 – 10). Such a polymer is superior in spin ability and less liable to gelation during melt spinning (column 4, lines 10 – 15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to select a PPS polymer with a non-Newtonian coefficient between 0.9 and 3.0 as suggested by Fukata for use in the meltblown web of Auerbach motivated by the desire to create easily processed meltblown web which is superior in spin ability and less liable to gelation.

4. Claims 1, 18 and 21 – 22 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Harwood et al (US 6,130,292) in view of Fukata (US 4,454,189). The rejection is detailed in the Office Action dated May 31, 2005. The rejection is maintained.

Art Unit: 1771

5. Claims 1, 18 and 21 – 22 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al (US 4,950,529) in view of Fukata (US 4,454,189). The rejection is detailed in the Office Action dated May 31, 2005. The rejection is maintained.

6. Claims 6, 8, and 10 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Harwood et al (6130292) or Auerbach (EP 709499) each in view of Fukata (4454189) and Senga (EP 353717), as set forth in the previous five actions. The details of the rejection can be found in the Office Action dated January 31, 2001. The rejection is maintained.

Response to Arguments

7. Applicant's arguments filed November 20, 2005 have been fully considered but they are not persuasive.

Applicant traverses the rejections by submitting a 1.132 Declaration. Applicant argues that the Declaration shows that the prior art does not suggest inherently or certainly does not teach motivation to reach the 1.05 – 1.20 range for the non-Newtonian coefficient (n) of the present invention. Applicant argues that Fukata is not produced by a melt-blowing method as required by the claim. It should be noted that the Examiner has not relied on Fukata to teach melt-blowing but rather relies on Ikeda et al (US 4,950,529), Harwood et al (6130292) and Auerbach (EP 709499) to teach meltblowing. The Examiner has relied on Fukata to provide motivation to use a polyarylene sulfide having a non-Newtonian coefficient between 0.9 – 2.0. The Applicant has shown that the Examples of Fukata teach a polyarylene sulfide polymer with $n = 1.25$ (Example 1) and $n = 1.67$ (Example 4), both which lie within the range of Fukata but

Art Unit: 1771

outside the claimed range. According to MPEP 2131.03, what constitutes a “sufficient specificity” is fact dependent. If the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with “sufficient specificity” to constitute an anticipation of the claims. In this case, the Applicant has not established unexpected and significant results. First, the Applicant has not shown that the desired results occur over the entire claimed range. In Table 2, Applicant has provided the non-Newtonian coefficient, average fiber diameter and process conditions for various Examples. However, the Applicant has not performed experiments at $n = 1.05$ and $n = 1.20$ which are the end-points of the claimed range. Additionally, the Applicant has not performed experiments at $n = 1.04$ and $n = 1.21$. The Examiner submits that these values are important for establishing criticality of the range because it is not clear that one skilled in the art “could ascertain a trend in the exemplified data that would allow him to reasonably extend the probative value thereof.” See *In re Clemens*, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980). Additional data is required for n values outside of Applicant’s claimed range to establish a trend in the data. Secondly, the Applicant submits that polyarylene sulfide polymers with a non-Newtonian coefficient outside of the claimed range exhibit “poor meltblown stability” while polymers with a non-Newtonian coefficient outside of the claimed range exhibit “good meltblown stability”. According to the Specification on page 20, “the meltblown stability was evaluated by the *naked eye* according to the following criteria: Good: Melt-blown, non-woven fabric having a uniform basis weight was formed without clogging the nozzles or Poor: Melt-blown, non-woven fabric having non-uniform basis weight was formed with nozzles often

Art Unit: 1771

clogged.” The Applicant is relying on subjective evidence to show criticality. It is not clear that an accurate line can be drawn between polymers exhibiting a good meltblowing stability and a poor meltblowing stability by such a subjective process. The Applicant has not indicated what constitutes “uniform basis weight” or “non-uniform basis weight”. Additionally, it is not clear that clogging of nozzles indicates poor melt blowing stability because Applicant indicates that nozzles are *often* clogged. Also, what constitutes clogging of nozzles? The Applicant should establish objective parameters to evaluate the concept of “good meltblowing stability” and “poor meltblowing stability” in order to provide a clear showing of criticality.

Applicant argues that it would have not been obvious to reach the non-Newtonian coefficient of the present claims by the reasonable expectation of varying the shear stress and shear strain. Applicant indicates that Figures 5 and 6 show that PPS polymers having a non-Newtonian coefficient exceeding 2 would produce a remarkable change in shear rate by any change in shear stress. It should be noted that this does not provide evidence that for non-Newtonian coefficients less than 2, as taught by Fukata, that changing the shear stress would result in a remarkable change in shear rate. The Examiner submits that as shown in the Figures the shear rate and shear stress can be varied and results in different non-Newtonian coefficient. It should be noted that the line for $n = 1.2$ and $n = 1.0$ are relatively linear and, therefore, would be within the skill of an artisan to vary the shear stress and shear strain to result in a desired non-Newtonian coefficient.

Conclusion

Art Unit: 1771

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

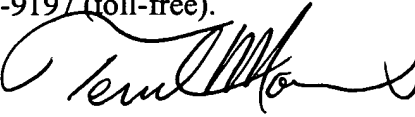
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Boyd whose telephone number is 571-272-1473. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer Boyd
2/15/06


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